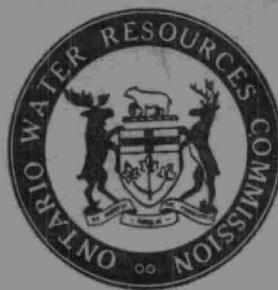


W.Q. LIB
50 microcr. (4)



STANDARDS DEVELOPMENT BRANCH OMNR
36936000008022

THE
ONTARIO WATER RESOURCES
COMMISSION

WATER POLLUTION SURVEY

of the

TOWNSHIP OF SALTFLEET

1967

OF SALTFLEET 1967
OF WENTWORTH

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca

R E P O R T

on a

WATER POLLUTION SURVEY

of the

TOWNSHIP OF SALTFLEET

Division of Sanitary Engineering

1967

I N D E X

<u>Contents</u>	<u>Page No.</u>
INTRODUCTION	1
GENERAL	1
A. Water Supply	1
B. Sanitary Waste Disposal	2
C. Industrial Waste	3
SCOPE OF INVESTIGATION	3
PRESENTATION OF RESULTS	4
DISCUSSION OF SAMPLE ANALYSES	4
SUMMARY	5
RECOMMENDATIONS	6

Appendix

ANALYTICAL RESULTS AND MAPS

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

ONTARIO WATER RESOURCES COMMISSION

R E P O R T

INTRODUCTION

A partial pollution survey of the Township of Saltfleet was carried out on July 18 and September 7, 1967.

The area studied included that portion of the township north of the escarpment line to Lake Ontario. Chemical and bacteriological samples were obtained from the area watercourses and analysed for pollution indicators. Investigations into causes were conducted in cases where a water impairment was noted. This is a follow-up report to this Commission's survey dated 1965.

GENERAL

A. Water Supply

The area of the township below the escarpment is supplied with municipal water from two sources. The majority of the water is supplied by the City of Hamilton with a small portion in the east end of the township supplied through the Township of North Grimsby. Both of the above municipalities obtain their water from Lake Ontario.

The OWRC has knowledge of two privately owned communal water supplies located along the Lake Ontario shoreline which serve cottage developments. The remaining areas are serviced by individual well supplies.

B. Sanitary Waste Disposal

Sanitary trunk sewers, which are connected to the City of Hamilton sewerage system, are available in the western portion of the township but, at present, are not extensively developed except in key areas of the township such as the industrial park, the three shopping plazas, two of the three high schools and Brentwood survey.

However, as noted in the 1965 pollution report, prepared by the Commission, in most cases the disposal of domestic waste is left to the individual property owners. The methods normally used are septic tank systems and cesspools. Heavy clay soils throughout the township greatly limit the effectiveness of such systems. In the older areas of the township evidence of private drains discharging to roadside ditches was found. This is especially true in the area bounded by Gray's Side Road and Margaret Avenue in the west end of the township. The 1965 pollution report further states that in nearly all areas, this failure is reflected by the presence of sewage in street ditches.

Two subdivisions in the township have been provided with waste stabilization ponds for treatment of sanitary wastes. These are the Bartlett (Gardendale) and Plateau Park developments both located between Highway 8 and the escarpment. A problem common to both, however, is the absence of an ideal receiving watercourse. This situation demands rigid control over the

effluent discharge from these facilities and for adequate control it is required that contents be released only at times of spring runoff when adequate dilution water is available in the receiving stream.

The Winona District High School is served by an extended aeration package type sewage treatment plant designed to handle up to 1,200 students or 18,000 gallons per day. Difficulties have been experienced with the plant due largely to inadequate maintenance.

C. Industrial Waste Disposal

The disposal of industrial wastewater by two industries within the township, namely Stoney Creek Dairy and E. D. Smith's canning plant, in previous years had resulted in several major problems. The Stoney Creek dairy is now connected to the sanitary sewers and the E. D. Smith's canning plant has constructed an approved extended aeration treatment plant.

SCOPE OF INVESTIGATION

As stated previously the survey was conducted as a follow-up report to this Commission's pollution survey on Saltfleet Township dated 1965 and to assess what progress had been made in eliminating pollution of the area watercourses north of the escarpment.

To this regard bacteriological and chemical samples were obtained at locations along the Township watercourses at the major road intersections. Samples along the shoreline of Lake Ontario were also obtained.

PRESENTATION OF RESULTS

The results of the above samples along with maps showing the sample locations can be found in Appendix I. The significance of the above results can be found in Appendix II.

DISCUSSION OF SAMPLE ANALYSES

All of the samples obtained during the above investigation from the watercourses leading to Lake Ontario showed an impaired quality. Domestic wastes as the cause was confirmed by the presence of A.B.S. (anionic detergents). The samples obtained from Lake Ontario were satisfactory, however, bacteriological samples obtained from the lake during the summer by the Wentworth County Health Unit were found to be adverse resulting in the Health Unit advising people not to swim in the lake. The special report prepared by this Commission on Confederation Park, dated January 8, 1968, concluded that these conditions contributed in part to the pollution of the Park area during June of 1967. It is of interest to note the high BOD and suspended solids levels obtained during the July 18, 1967 sampling period at sample points 41, 38, 37, and 35 (see Appendix I Table G). This was due to the bypassing of waste from the E. D. Smith's plant to the creek during a pump breakdown at the plant's sewage treatment works.

The September 7, 1967, results indicate the water quality in the stream to have improved after the plants sewage treatment facilities had been put back into operation (see above

Appendix and Table).

Although a sanitary sewer programme is underway in the township it may be necessary to accelerate and/or extend the development of this programme to the built areas such as Bland Gardens Subdivision and the area bounded on the west by Gray's Side Road, the east by Margaret Avenue, the south by Highway No. 8 and the north by Barton Street.

SUMMARY

A water pollution survey of the Township of Saltfleet below the escarpment was carried out during July and September of 1967. The results of the field observations and laboratory analyses of samples reveal that pollution of the area watercourses by domestic and to some extent industrial waste was apparent. With regard to the latter, the pollution was caused from wastewater bypassing the treatment works at E. D. Smith's Company plant during a failure in the pumping facilities. This was subsequently corrected.

As stated in our 1965 pollution survey report and again shown by this survey the pollution can be attributed to two interrelated causes; the lack of municipal sanitary sewers and the inadequacy or inefficiency of individual waste disposal systems. In view of the adverse soil conditions which prevail, little improvement can be expected on an individual basis. It would appear that the only satisfactory and permanent solution is the development of sanitary

sewers in all developed areas of the township.

RECOMMENDATIONS

It is recommended that sanitary sewers be provided to the built-up areas of the township.

/f1

Prepared by



W. B. Pett, Technician,
Division of Sanitary Engineering.

APPENDIX II

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

A. Bacteriological Examination

Bacteriological examinations were performed on samples from the watercourse. The Membrane Filter technique was used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warm blooded animals. They are always present in sewage and are generally minimal in other pollutants. The results of the examinations are reported as M.F. Coliform count per 100 ml.

The MPN index reported by Regional Health Laboratories on water as the Most Probable Number (MPN) per 100 millilitres of sample is employed to determine the count of coliform bacteria present in water supplies.

The Commission's objective for surface waters in Ontario is a coliform count of not greater than 2,400 organisms per 100 ml.

B. Chemical Analysis

The chemical analysis performed on stream and outfall samples included determinations for biochemical oxygen demand and suspended solids.

(1) Biochemical Oxygen Demand (BOD)

Biochemical Oxygen Demand is reported in parts per million (ppm) and is an indication of the amount of oxygen required for stabilization of decomposable organic matter present

in sewage, polluted waters or industrial wastes. The completion of the test requires 5 days, under the controlled incubation temperature of 20° C.

The Commission's water quality objectives are

- (i) for stream water - a 5-day BOD of not greater than 4 ppm.
- (ii) for storm sewer, water pollution control plant and industrial waste discharges - a 5-day BOD of not greater than 15 ppm.

(2) Solids

The laboratory does tests to determine the total and suspended solids in a sample. The value for dissolved solids is determined by taking the mathematical difference between the total and suspended solids.

The concentration of suspended solids expressed in parts per million (PPM) is generally the most significant of the solids analyses in regard to stream water and outfall discharge qualities.

The OWRC's objective for discharge is a suspended solids concentration of not greater than 15 ppm.

ABS (ALKYL BENZENE SULFONATE)

The alkyl benzene sulfonate portion of the anionic detergents is reported in ppm. The test is generally employed to indicate the presence of illegal discharge of wastewater to storm drains.

APPENDIX I
TOWNSHIP OF SALTFLEET
KEY MAP

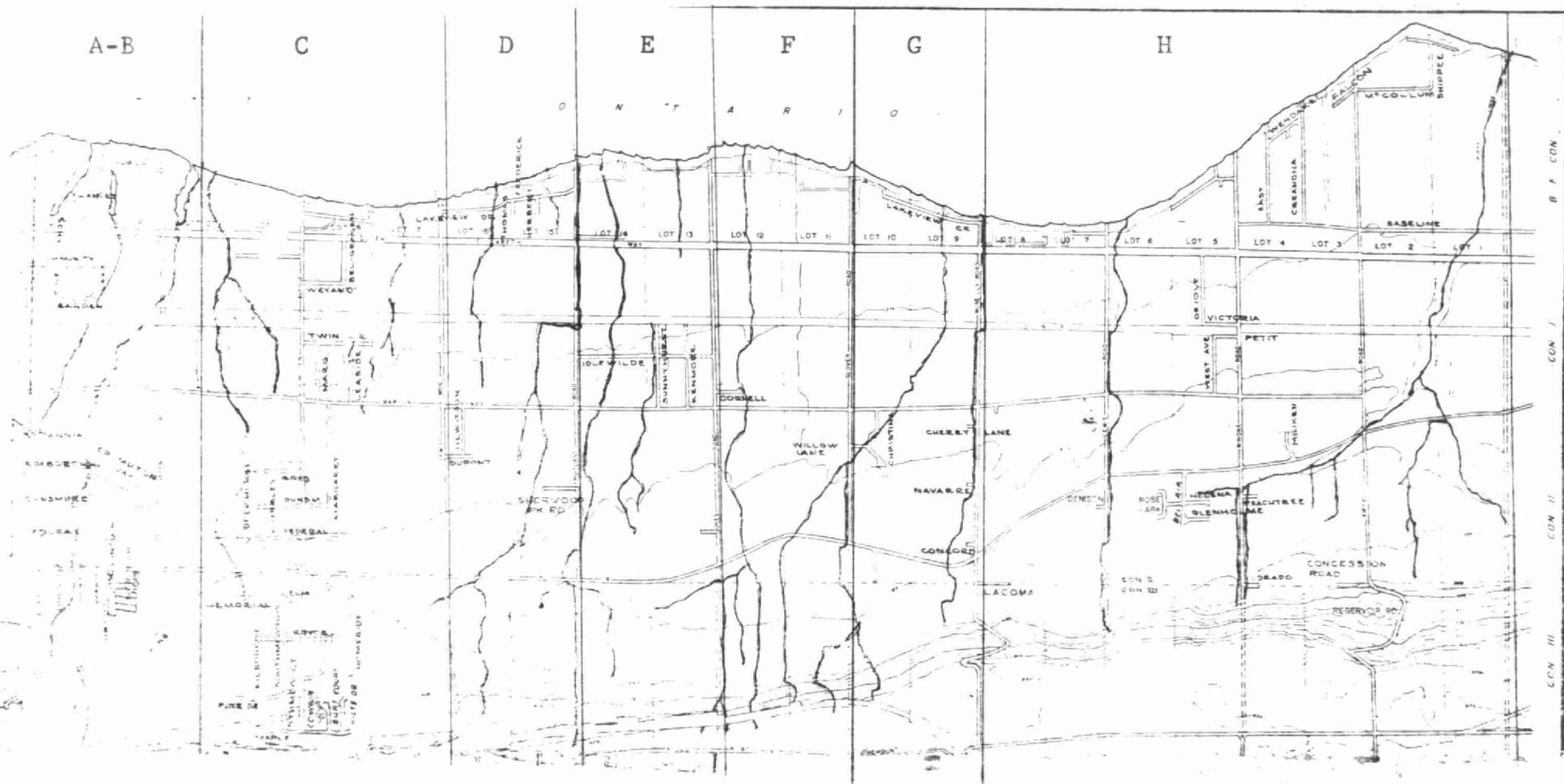


TABLE A
Coliform Organisms/100ml.

No.	Date	5-Day BOD	Susp. Solids	Membrane Filter	Fecal
1	July 18/67	2.1	12	70	<4
2	July 18/67	1.3	19	68	<4
	Sept. 7/67	1.6	5		
3	July 18/67	3.9	10	30	10
	Sept. 7/67	7.0	37		
4	July 18/67	18	464	9,000	<10
	Sept. 7/67	4.6	28		
5	July 18/67	2.0	122	~100	290
	Sept. 7/67	8.8	126		
6	July 18/67	5.0	33		1,330
	Sept. 7/67	11	13		
7	July 18/67	66	183	15M	175,000
	Sept. 7/67	560	322	1,020,000,000	
8	July 18/67	1700	698	730,000	50,000
	Sept. 7/67	920	634	810,000,000	

Note: No. 8 Storm Sewer Servicing
Bland Gardens

No. 7 same as above

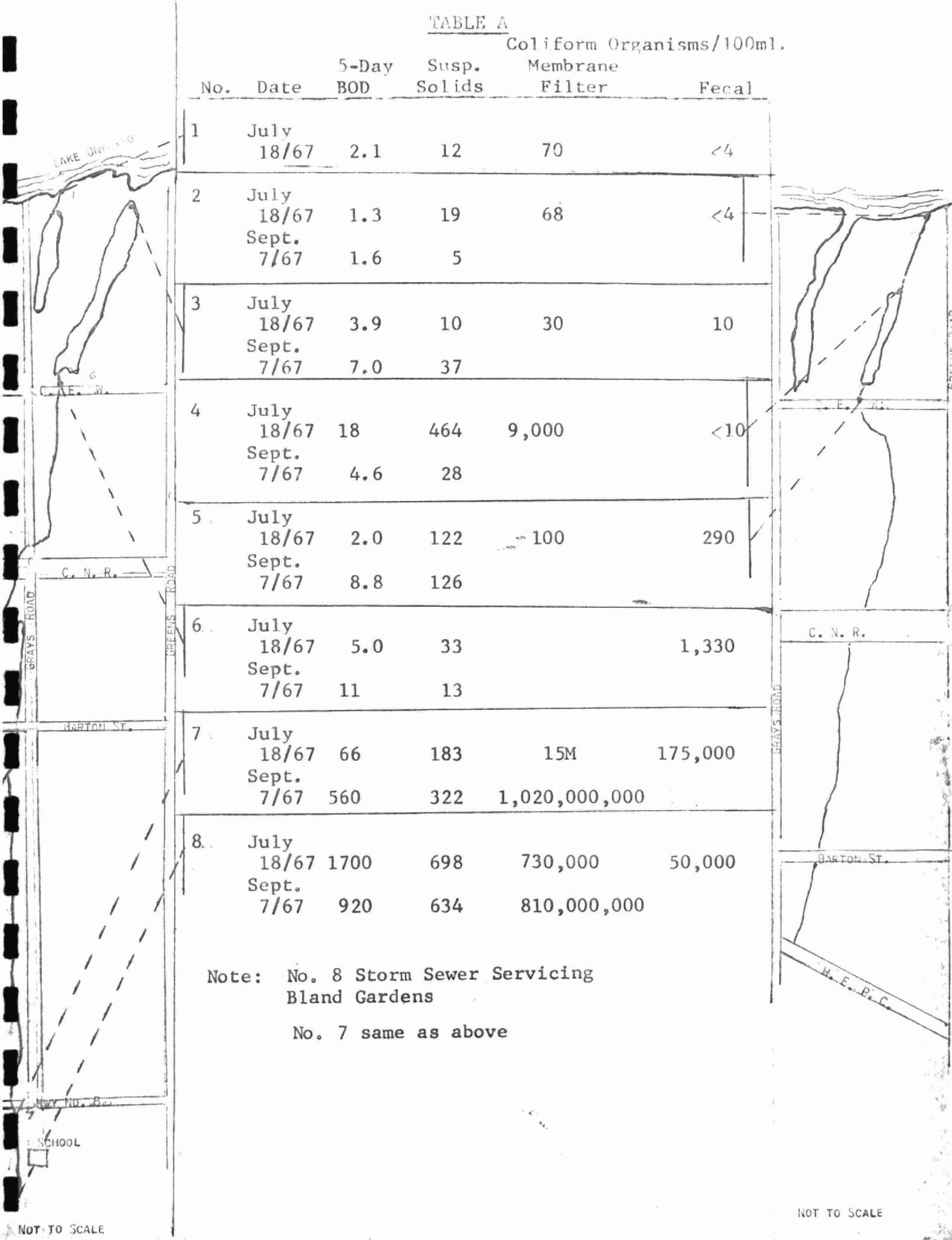


TABLE B

Coliform Organisms/100ml.

<u>No.</u>	<u>Date</u>	<u>5-Day BOD</u>	<u>Susp. Solids</u>	<u>Membrane Filter</u>	<u>Fecal</u>
9	July 18/67	0.4	37	16	<4
	Sept. 7/67	2.6	4		
10	July 18/67	1.8	89	90	20
	Sept. 7/67	7.8	34		
11	July 18/67	2.7	24	6,100	1,100
	Sept. 7/67				
12	July 18/67	2.3	25	870	50
	Sept. 7/67	17	53	1,000,000	
13	July 18/67	2.2	41	110,000	290
	Sept. 7/67				



TABLE C
Coliform Organisms/100ml.

No.	Date	5-Day BOD	Susp. Solids	Membrane Filter	Fecal
14	July 18/67 Sept. 7/67	0.6	4	240	20
15	July 18/67 Sept. 7/67	6.2	42	160,000	570
16	July 18/67 Sept. 7/67	0.5 1.9	20 3	330	28
17	July 18/67 Sept. 7/67	3.1	38	4,300	400
18	July 18/67 Sept. 7/67	5.6	20	27,000	860

TABLE D

No.	Date	5-Day BOD	Susp. Solids	Coliform Organisms/100 ml.	
				Membrane Filter	Fecal
19	July 18/67 Sept. 7/67	4.9	2	550	130
20	July 18/67 Sept. 7/67	0.9	1	80	10
21	July 18/67 Sept. 7/67	2.4	15		
22	July 18/67 Sept. 7/67	16	21	380	110
		4.0	82		

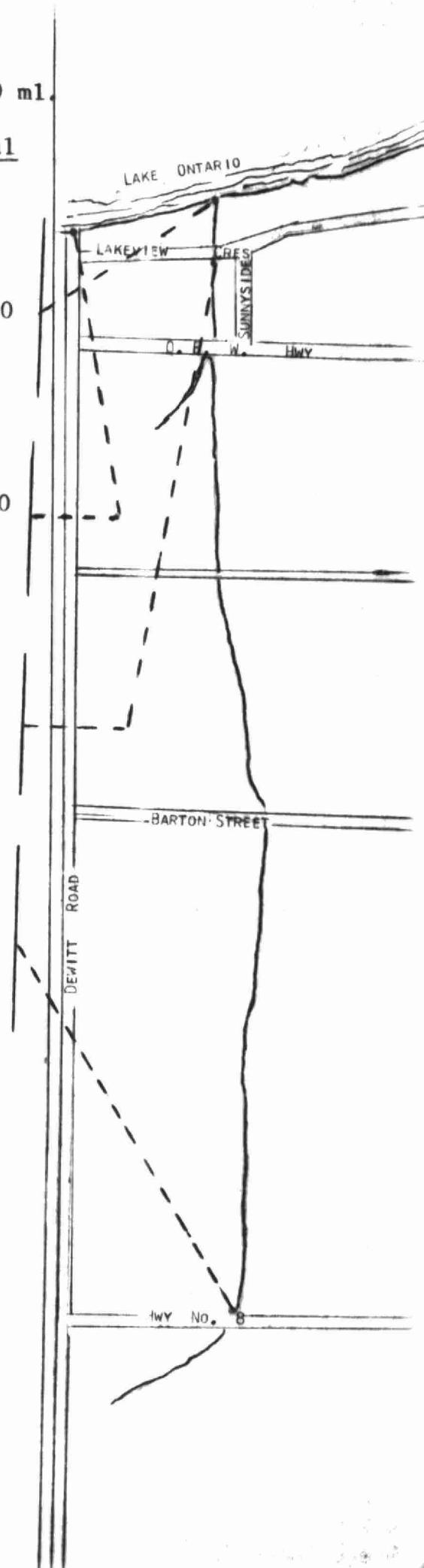
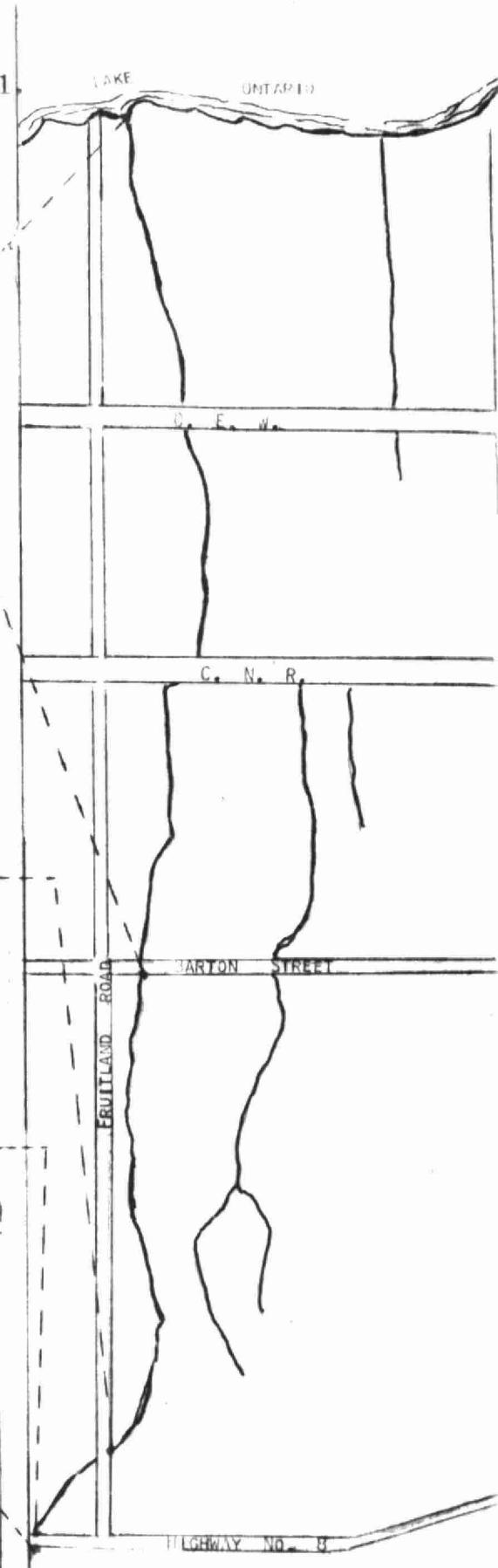


TABLE E
Coliform Organisms/100ml

No.	Date	5-Day BOD	Susp. Solids	Membrane Filter	Fecal
23	July 18/67	0.8	1	47,000	60
	Sept. 7/67	1.2	4		
24	July 18/67	0.7	4	364	8
	Sept. 7/67				
25	July 18/67	17	199	90,000	2,600
	Sept. 7/67				
26	July 18/67	2.4	64	43,000	2,890
	Sept. 7/67	4.0	17		
27	July 18/67				
	Sept. 7/67	315	934	32 M	510,000



Note: No. 27 Private Storm Drain Discharging to Stream

TABLE F

Coliform Organisms/100ml

No.	Date	5-Day BOD	Solids	Membrane Filter	Fecal
28	July 18/67 Sept. 7/67	0.8 1.3	1 22	560	20
29	July 18/67 Sept. 7/67	0.6 1.7	12 5	330	20
30	July 18/67 Sept. 7/67	5.0	92		
31	July 18/67 Sept. 7/67	15	272	600	1,100
32	July 18/67 Sept. 7/67	10 2.2	30 40	640,000	10,000
33	July 18/67 Sept. 7/67	6.2	15	200	120
34	July 18/67 Sept. 7/67	40 42	30 36	700,000 10,000,000	8,000

Note: No. 34 Storm Drain Discharging to Watercourse

TABLE G

No.	Date	5-Day BOD	Solids	Coliform Organisms/100ml.			Map
				Membrane Filter	Fecal		
35	July 18/67	450	188	910,000	<150,000		
	Sept. 7/67	9.8	18				
36	July 18/67	30	23	11,700,000	<1,500,000		
	Sept. 7/67	56	51				
37	July 18/67	790	154	140,000,000	<1,500,000		
	Sept. 7/67	4.8	28				
38	July 18/67	685	144	119,000,000	138,000,000		
	Sept. 7/67	5.8	35				
39	July 18/67	9.2	27	570,000			
	Sept. 7/67	4.8	10				
40	July 18/67	1.4	2	52,000			
	Sept. 7/67	0.5	8				
41	July 18/67	18	24	380,000			
	Sept. 7/67	6.8	21				
42	July 18/67	17	17	1,050,000			
	Sept. 7/67						

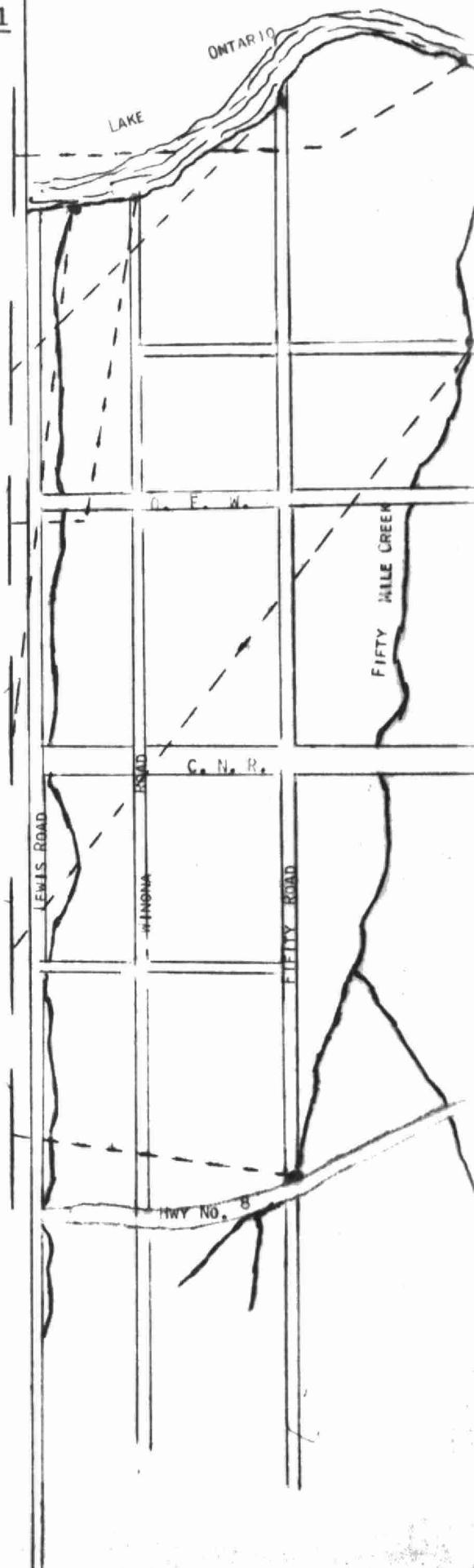
Note: No. 41 Storm Drain from E. D. Smith's Cannery

No. 38 Outfall at E. D. Smith's old STP

No. 36 Private Drain into Road Ditch

TABLE H
Coliform Organisms/100ml.

<u>No.</u>	<u>Date</u>	<u>5-Day BOD</u>	<u>Solids</u>	<u>Membrane Filter</u>	<u>Fecal</u>
43	July 18/67 Sept. 7/67	1.4 1.6	10 12	90	8
44	July 18/67 Sept. 7/67	0.5 2.0	6 22	190	12
45	July 18/67 Sept. 7/67	0.6 2.3	12 13	80	30
46	July 18/67 Sept. 7/67	0.5 1.4	1 7	270	160
47	July 18/67 Sept. 7/67	4.5	22	11,900	110
48	July 18/67 Sept. 7/67	3.0	13	6,300	5,000



Note: Fifty-Mile Creek - Receiving Stream
for Bartlett Lagoon Effluent